

### **REMARKS**

The Applicant thanks the Examiner for the careful consideration of this application. Claims 1-28 are currently pending. Claim 1 has been amended. Claims 17-27 have been withdrawn. New claim 28 has been added. Based on the foregoing amendments and the following remarks, the Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

#### **Election/Restriction**

Claims 17-27 of this application have been withdrawn pursuant to Applicant's election of Group I, claims 1-16, in the reply filed March 25, 2010.

#### **Information Disclosure Statement**

The Office Action indicated that references CA-CG listed in the Form PTO/SB/08 accompanying the Information Disclosure Statement filed on June 9, 2006 have not been considered, because copies of non-patent literature documents CA-CG were not submitted with the Information Disclosure Statement. Accordingly, the Office Action returned a copy of the Form PTO/SB/08 with references CA-CG lined through by the Examiner.

The Applicant submits herewith a Supplemental Information Disclosure Statement including copies of references CA-CG in conformance with 37 C.F.R. 1.98(a)(2). Accordingly, the Applicant requests that the Office consider references CA-CG and return a copy of the Form PTO/SB/08

accompanying the supplemental Information Disclosure Statement, indicating consideration of references CA-CG.

Request for Information

The Office Action set forth a requirement under 37 C.F.R. 1.105 for the Applicant to provide a copy of each publication which any of the applicants authored or co-authored and which describe the disclosed subject matter of the nitroreductase enzyme that is modified to include the terminal cysteine residues. Specifically, the Office Action requested the Applicant to provide a copy of "Poster 50: The Development of an Amperometric Enzyme Sensor for the Detection of Explosives," Posters of the 2003 Younger European Chemists' Conference, which was listed in the International Search Report submitted in this application on June 9, 2006. The Office Action also requested copies of references CA-CG listed in the Form PTO/SB/08 accompanying the Information Disclosure Statement filed on June 9, 2006.

Applicant submits herewith a Supplemental Information Disclosure Statement including a copy of the abstract for "Poster 50: The Development of an Amperometric Enzyme Sensor for the Detection of Explosives," Posters of the 2003 Younger European Chemists' Conference (reference CB on the Form PTO/SB/08), which was listed in the International Search Report submitted in this application on June 9, 2006. However, the poster itself was never presented, as the poster was withdrawn before the conference. Accordingly, a copy of the poster itself is not submitted herewith.

The Supplemental Information Disclosure Statement also submits copies of references CA-CG listed in the Form PTO/SB/08 accompanying the Information Disclosure Statement filed on

June 9, 2006, as well as three additional non patent literature references CH-CJ that relate to the subject matter of the present application. Applicant notes that references CH-CJ were submitted for publication after the filing date of the present application.

As noted in the Office Action on page 4 in section 10, the Office is waiving the fee and certification for these documents as submitted with the Supplemental Information Disclosure Statement.

In view of the foregoing, it is submitted that the Applicant has fully complied with the requirement under 37 C.F.R. 1.105.

Rejection under 35 U.S.C. § 102

The Office Action rejected claims 1-7 and 9 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,443,701 to Willner et al. (“Willner”) with further evidence provided by U.S. Patent No. 5,777,190 to Shah et al. (“Shah”). The Applicant traverses this rejection. Nevertheless, independent claim 1 has been amended solely to further prosecution. The Applicant submits that claim 1 is patentable over Willner in conjunction with Shah for at least the following reasons.

Willner does not disclose a “noble metal layer, on which layer is located a biological material having nitroreductase activity, wherein the biological material comprises a plurality of cysteine residues and wherein conjugation of the biological material and the noble metal layer is via cysteine linkages,” as recited by claim 1. Instead, Willner discloses biosensors where an enzyme is linked to a metal of the biosensor using a linking group. For example, at column 9, line 33, Willner

describes “a linking group 3” between “the gold electrode 1” and the “redox enzyme 4.” In addition, Willner’s Examples 1, 2, 10, and 11 use linking groups to bind an enzyme to the metal layer. Specifically, Example 1 uses a bifunctional reagent; Example 2 uses cystamine or cysteamine; Example 10 uses cystamine or cysteamine and a polylysine chain; and Example 11 uses dithio-bis-(succinimidylpropionate). The disclosure of Willner is different from claim 1, where “conjugation of the biological material and the noble metal layer is via cysteine linkages.” Accordingly, Willner does not disclose a “noble metal layer, on which layer is located a biological material having nitroreductase activity wherein the biological material comprises a plurality of cysteine residues and wherein conjugation of the biological material and the noble metal layer is via cysteine linkages,” as recited by claim 1. Shah does not remedy the deficiencies of Willner.

The Applicant submits that claim 1 is patentable over Willner in conjunction with Shah for at least the foregoing reasons. Claims 2-7 and 9 depend from claim 1, and are patentable for at least the same reasons.

#### Rejections under 35 U.S.C. § 103

(1) The Office Action rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Willner in view of International Publication No. WO 03/018788 to Grove et al. (“Grove”) and Shah. Claim 8 depends from claim 1, which as demonstrated above, is patentable over Willner and Shah. Grove does not remedy the deficiencies of Willner and Shah, for at least the reason that Grove contains no information about biosensors. Accordingly, claim 8 is patentable over any reasonable combination of Willner, Grove, and Shah.

(2) The Office Action rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Willner in view of U.S. Patent No. 5,795,774 to Matsumoto et al. (“Matsumoto”) and Shah. Claim 10 depends from claim 1, which as demonstrated above, is patentable over Willner and Shah. Matsumoto does not remedy the deficiencies of Willner and Shah, for at least the reason that Matsumoto does not disclose direct binding of an enzyme to a metal layer. Accordingly, claim 10 is patentable over any reasonable combination of Willner, Matsumoto, and Shah.

(3) The Office Action rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Willner in view of U.S. Patent No. 5,521,101 to Saini et al. (“Saini”) and Shah. Claims 11 and 12 depend from claim 1, which as demonstrated above, is patentable over Willner and Shah. Saini does not remedy the deficiencies of Willner and Shah, for at least the reason that Saini does not disclose direct binding of an enzyme to a metal layer. Accordingly, claims 11 and 12 are patentable over any reasonable combination of Willner, Saini, and Shah.

(4) The Office Action rejected claims 13 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Willner in view of U.S. Patent No. 5,834,224 to Ruger et al. (“Ruger”) and Shah. Claims 13 and 16 depend from claim 1, which as demonstrated above, is patentable over Willner and Shah. Ruger does not remedy the deficiencies of Willner and Shah, for at least the reason that Ruger does not disclose direct binding of an enzyme to a metal layer. Accordingly, claims 13 and 16 are patentable over any reasonable combination of Willner, Ruger, and Shah.

(5) The Office Action rejected claims 14 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Willner in view of Ruger, Grove, and Shah. Claims 14 and 15 depend from claim

1, which as demonstrated above, is patentable over Willner and Shah. Ruger does not remedy the deficiencies of Willner and Shah, for at least the reason that Ruger does not disclose direct binding of an enzyme to a metal layer. Grove does not remedy the deficiencies of Willner and Shah, for at least the reason that Grove contains no information about biosensors. Accordingly, claims 14 and 15 are patentable over any reasonable combination of Willner, Ruger, Grove, and Shah.

#### New Claim 28

New claim 28 has been added. Claim 28 depends from claim 1, and is patentable over the prior art of record for at least the same reasons. Accordingly, the Applicant requests examination and allowance of claim 28.

### **CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant, therefore, respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Application No. 10/582,557  
Amendment dated November 24, 2010  
Reply to Office Action of May 26, 2010

Docket No.: 31229-232367

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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